

### A01

### Development and dynamics of rainforest and rainforest transformations in Sumatra during prehistoric and historic times

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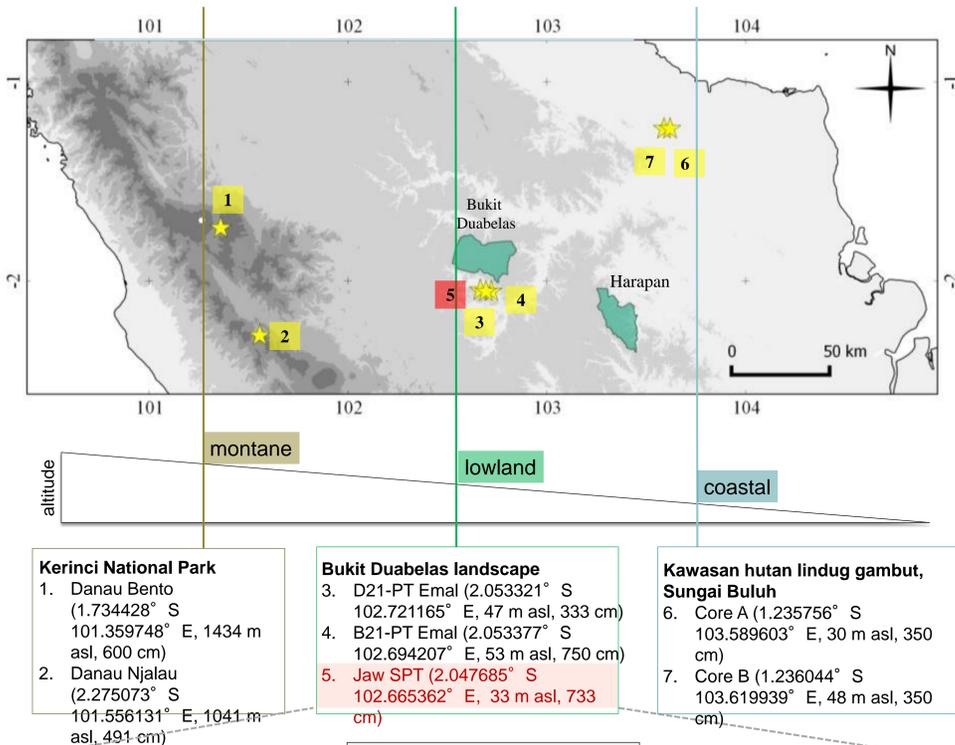
#### Background

- Lakes, bogs and swamps in Jambi province are important environmental archives to record rainforest and rainforest transformations in the landscape at different scales in space (local to regional) and time (decadal, centennial, millennial)
- The multi-proxy approach including high resolution pollen, charcoal and sediment analyses allows to investigate rainforests and rainforest transformation systems during prehistoric and historic times
- The exceptional high diversity of different pollen and spore types in tropical regions allows the evaluation of plant diversity changes in rainforest and rainforest transformation systems during the past

#### Goals

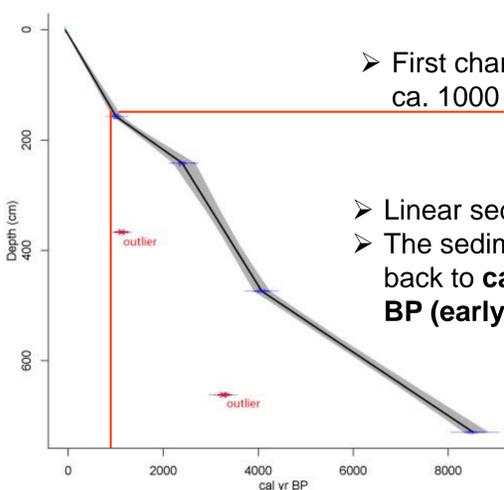
- Estimating vegetation/pollen rain relationship on CRC plots as a tool for the interpretation of pollen records
- Reconstructing past vegetation, plant diversity and climate dynamics
- Assessing the ecological response of rainforest and rainforest transformation systems to environmental variability
- Investigating the history of human impact on the landscape (shifting cultivation, slash and burn, crop cultivation, rubber and palm oil plantations)
- Assessing the impact and role of droughts (ENSO) and fire
- Providing the evaluation of current and future changes from a historical perspective

#### Methods, materials and state of art

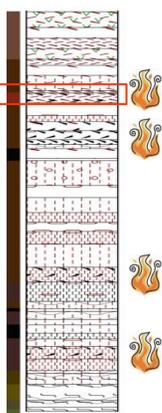


#### Jaw SPT first results

#### Age-depth model



#### Lithological profile



#### Pollen and charcoal analyses

- **Pollen and spore** composition reflects past vegetation and plant diversity dynamics, land use changes due to human activities, climate variability
- **Charcoal** documents past fire frequencies (ENSO, human impact, change in fire regime)

- ✓ Total of **7 locations** cored along the altitudinal gradient in Jambi province
- ✓ First sediment core **Jaw SPT** under study for pollen, spore, charcoal and Testate amoeba (in collaboration with Dr. Valentyna Krashevskaya B08)

#### Sedimentology and stratigraphy

- Providing signals of past **environmental changes** and human activities (drought, land use changes)

- ✓ All **6 cores** stratigraphy described lithologically

#### AMS-radiocarbon dating

- Providing **chronology** of cores

- ✓ Results from first **6 samples** ready! Additional 4 samples sent to date

#### Modern pollen rain-vegetation relationship

- Needed for correct **interpretation** of palaeo-records

- ✓ Total of **64 pollen traps** installed in the EFForTS plots (2 pollen traps per plot) in September 2013

#### Multivariate data analysis

- Results are used to identify rainforest **dynamics** and historical fire regimes

Final stage of data analysis

#### A new lab in town!



#### Pollen and spore reference collection

Preparation of reference collection started in UNJA laboratory in collaboration with B06 (Dr. Katja Rembold). First **130 samples** ready.



Pollen trap in Bukit Duabelas